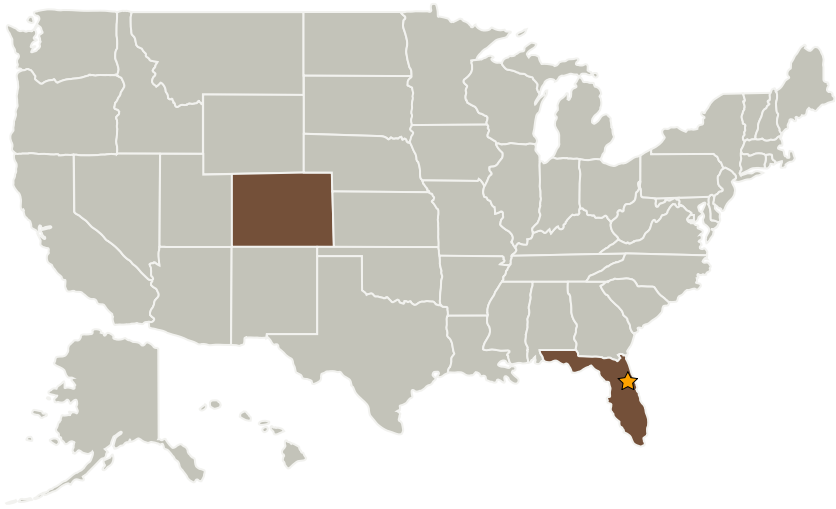
High Temperature Acoustic Noise Reduction Materials, Phase I

Completed Technology Project (2004 - 2005)

Project Introduction

The proposed innovation is to use combustion synthesis techniques to manufacture ceramic-based acoustic liners capable of withstanding temperatures up to 2500?C. Combustion synthesis or self-propagating high temperature synthesis (SHS) is a novel technique used by Guigne Space Systems Inc. to produce many advanced high-temperature materials and composites. The materials have a ceramic matrix (alumina Al2O3, MgO, Al2O3-MgO, TiC-Al2O3, or Al2O3-TiB2) and exhibit high porosity. These materials can also be fabricated with a functional gradient, i.e., with a change in chemistry and/or porosity within the same sample. When compared to traditional manufacturing techniques for high-temperature materials, combustion synthesis has the advantages of energy and time saving methods, high purity final product, simplicity of process and low cost. The target application for the porous ceramics is as high temperature acoustic liners for noise reduction in rocket and jet engines. The proposed work is Phase I of the project.

Primary U.S. Work Locations and Key Partners



High Temperature Acoustic Noise Reduction Materials, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

High Temperature Acoustic Noise Reduction Materials, Phase I

Completed Technology Project (2004 - 2005)

Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Guigne Space Systems Inc.	Supporting Organization	Industry	Golden, Colorado

Primary U.S. Work Locations	
Colorado	Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.1 Infrastructure Optimization
    - TX13.1.1 Natural and Induced Environment Characterization and Mitigation